

## **(Abstract) Data Compression for High-Spectral Resolution Measurements**

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Given the unprecedented volume of data (>72 Megabits per second) that will be generated by the future NOAA Geostationary Operational Environmental Satellite (GOES-R and beyond), the use of innovative data compression techniques will be essential if continuous downlink and re-broadcast from geo-orbit are to be economically feasible. A team of scientists and engineers from the Cooperative Institute for Meteorological Satellite Studies (CIMSS) of University of Wisconsin-Madison, Offices of Research and Applications and Systems Development of NOAA/NESDIS, NASA/GSFC, and The Aerospace Corporation a Federally Funded Research and Development Center have been assembled to study the development of data compression for the next generation GOES sounder. This study is intended to define some feasible approaches what can achieve both on-board and ground-based data compression. In general, on-board processing systems have substantially limited processing and storage capabilities than that of the ground-based. Therefore, both highly efficient lossless/ lossy algorithms need to be developed to meet both objectives. In particular, innovative compression techniques for optimal quantization, transformation, coding, and decoding in interferogram or spectrum domains will be essential for practical NOAA real-time operational data processing and distribution. In this presentation we will clearly define testing data sets (real and simulated), approaches, performance and feasibility of achieving “tunable lossless and lossy” high-spectral resolution data compression to a manageable data rate.

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Allen Huang presently serves as Senior Scientist/Principal Investigator, Space Science and Engineering Center, University of WI-Madison. He is the Principal Investigator for projects of International MODIS and AIRS Processing Package, NOAA Advanced Baseline Imager & Sounder (ABI/ABS), Navy Multiple University Research Initiative (MUI) projects. Mission scientist for GIFTS/IOMI algorithm development and data processing. Other research work includes data compression, hyperspectral data sounding retrieval, cloud property derivation, instrument simulation and trade performance analysis, NWP modeling uses for simulating new instrument. He is also an Adjunct Professor, Nanjing Institute of Meteorology.

Allen has over twenty two years of comprehensive experience in meteorological satellite data processing and application, including recent experience includes the simulation of geostationary sounding measurement and data processing for NASA, NOAA, and navy research and operational hyperspectral space systems.

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